

LISTING OF CLAIMS

1-137 (Cancelled)

138 (Currently Amended)

A method of establishing an equine artificial insemination sample for equine artificial insemination comprising the steps of:

- a. obtaining equine sperm cells from a male of a species of equine mammal;
- b. staining said equine sperm cells to allow differentiation based upon a sex characteristic;
- c. establishing a cell source which introduces said equine sperm cells which have been stained into a sheath fluid;
- d. forming droplets in said sheath fluid;
- e. entraining said equine sperm cells which have been stained in said droplets;
- f. differentiating between said equine sperm cells entrained in said droplets based upon said sex characteristic;
- g. separating said droplets based upon said sex characteristic of said equine sperm cells entrained at a rate of at least nine hundred viable equine sperm cells per second;
- h. establishing a skim milk solution into which said droplets separated based upon said sex characteristic of said equine sperm cells entrained are collected;
- i. collecting viable equine sperm cells separated based upon said sex characteristic in said skim milk solution;
- j. establishing an equine artificial insemination sample containing ~~at least some of~~ said viable equine sperm cells separated based upon said sex characteristic which are capable of fertilizing at least one egg within a female of said species of equine mammal at success levels selected from the group consisting of ~~at least 90%, at least 81%, at least 75%, at least 65%, at least 60%, at least 57%, at least 40%, at least 35%, and at least~~

30% of a typical at least 87%, at least 70%, at least 53%, and at least 18%
as compared to an unsorted equine artificial insemination dosage
containing about the same number of sperm cells.

139 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected comprises the step of establishing a solution containing a skim milk extender as a collection fluid.

140 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 139 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected further comprises the step of establishing a solution containing about four percent egg yolk as a collection fluid.

141 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said sheath fluid contains a HEPES buffered medium.

142 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said step of separating said droplets based upon said sex characteristic of said equine sperm cells further comprises the step of sorting said droplets having said equine sperm cells entrained using a flow cytometer.

143 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 142 wherein said step of sorting said droplets having said equine sperm cells entrained comprises the step of operating said flow cytometer at a pressure of at least about fifty pounds per square inch.

144 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said equine artificial insemination sample is selected from the group consisting of: an equine artificial insemination sample of no more than about five million equine sperm cells, and an equine artificial insemination sample of no more than about twenty-five million equine sperm cells.

145 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said equine artificial insemination sample has a volume selected from the group consisting of : 0.2 ml, and 1 ml.